

ment has a Cooke photo-visual lens of 4 inches aperture and 16 feet focal length, the primary image being used on plates 12 × 12 inches.

In addition, the De la Rue coronagraph (4½ inches aperture and 72 inches focal length), Graham coronagraph (3 inches aperture, 21 inches focal length), and Dallmeyer coronagraph (6-inch aperture rapid rectilinear, 48 inches focal length) will be used. Parties of the volunteers will be engaged in one or other of the following observations :—

Disc drawings of corona ...	about 19	volunteers.
Observations of ring spectra ...	5	”
Observations with pocket slit spectroscopes... ..	4	”
Observations of shadow bands... ..	6	”
Observations of stars and other celestial objects visible during totality	20	”
Shadow phenomena, both atmospheric and terrestrial ...	6	”
Colours of landscape, &c. ...	12	”
Meteorology, temperature, pressure, &c.	15	”
Photographs of landscape ...	5	”
Natural history effects on men and animals	3	”

In addition to these instruments, several of the observers will obtain photographs of the eclipse spectra by means of diffraction gratings and prisms fixed in front of their own small cameras. Those with gratings are likely to be specially useful, as the dispersion is sufficiently great to render it possible for the bright line spectra to show up from the continuous spectrum, and there is the further advantage of the large field given by an ordinary rectilinear, so that the spectrum of the streamers may also be obtained.

Prof. Copeland, Astronomer Royal of Scotland, will also occupy a station at Santa Pola, using a telescope of 40 feet focus.

The British Astronomical Association and the French Astronomical Society will each send parties to both Alicante and Algiers. As, however, the former place is so well occupied by Sir Norman Lockyer's party, the third official party from the British Government will occupy a station at Algiers, and will consist of Prof. Turner, Mr. Newall, Mr. Evershed and Mr. Wesley.

Prof. Turner will photograph the corona with one of the double cameras used in previous eclipses, one of which is arranged to polarise the coronal light before it reaches the photographic plate, and thereby determine the extent to which this light is initially polarised. In addition, he also hopes to repeat his work of 1893 and 1898 for determining photometrically the relative brightness of the corona at varying distances from the limb.

Mr. Newall will have three instruments under his charge, viz. :—(1) A four-prism slit spectrograph for obtaining the spectrum of the “flash,” and of the corona. In the latter he hopes to obtain material for showing the difference, if any, between the spectrum of the coronal rays and the other portions. (2) An objective grating camera for photographing the spectrum of the corona in monochromatic light. (3) A polariscopic camera for photographing the corona, special attention being devoted to the study of any differences between the darker and brighter rifts.

Mr. Wesley, the assistant secretary of the Royal Astronomical Society, has for many years critically studied the minute structure of the corona, he being the draughtsman who has engraved the reproductions of many of the corona photographs of past eclipses for publication, but has not hitherto had an opportunity of studying it from nature. By the kindness of M. Trépiéd, the Director of the French Government Observatory at Algiers, Mr. Wesley will be enabled to examine the corona with the powerful “equatorial coudé” (about 8 inches aperture).

Mr. Evershed will not be stationed at Algiers itself, but intends to observe from a place near the limiting line of totality, about twenty miles south of Algiers, so that he may photograph the “flash” spectrum with somewhat longer exposure than near the central line.

Mr. and Mrs. Maunder will repeat at Algiers their programme so successfully carried out at Buxar, India, in 1898, but with larger apparatus. This will include short exposure photographs of the inner corona, and others with long exposure for extensions and streamers.

Mr. and Mrs. Crommelin will go to Algiers, and take photographs of the corona and of the shadow as projected on the atmosphere.

It is also stated that Mr. Percival Lowell, of Arizona, and Prof. Todd, of Amherst College Observatory, U.S.A., will occupy stations near Tripoli, in North Africa. It is to be hoped that favourable weather will enable the latter astronomer to successfully use his electrical control, by means of which he has arranged that a great number of photographic cameras shall be automatically exposed for varying times, all of which are operated from one revolving drum with delicately fitted electrical contacts.

The eclipse occurs at the European stations about 4.0 p.m. Greenwich time, so that it may be possible to communicate the results of the various expeditions to the evening papers of the same day.

Mention should be made of the generous arrangements which have been made by the authorities of all the Governments concerned, whereby the usual customs tariff and examination will be dispensed with, provided the observer is furnished with a certificate showing that his baggage is really for eclipse observation. The railway companies in Spain have also consented to convey passengers at half the usual fares.

CHARLES P. BUTLER.

THE ROYAL SOCIETY SELECTED CANDIDATES.

FIFTEEN candidates were selected by the Council of the Royal Society on Thursday last for election into the Society. The following are the names and qualifications of the new Fellows :—

GEORGE JAMES BURCH,

M.A. (Oxon). Lecturer at the University Extension College, Reading. Author of the following papers :—(1) “Experiments on Flame” (*NATURE*, 1885-86); (2) “A Perspective Microscope” (*Proc. Roy. Soc.*, vol. xiii.); (3) “Researches on the Capillary Electrometer” (*Proc. Roy. Soc.*, vol. xlvi., *ibid.*, vol. lix., *Phil. Trans.*, vol. clxxxiii(A)), *The Electrician*, July, 1896). “On a Method of drawing Hyperbolas” (*Phil. Mag.*, Jan., 1896). Also joint author of the following papers :—(1) “Dissociation of Amine Vapours” (with Mr. J. E. Marsh) (*Journ. Chem. Soc.*, 1889); (2) “E.M.F. of certain cells containing Nitric Acid” (with Mr. V. H. Veley) (*Phil. Trans.*, vol. clxxxiii(A)); (3) “Effect of Injury in Muscle” (with Prof. Burdon-Sanderson) (*Proc. Physiol. Soc.*, 1893); (4) “Action of Concentrated Acids on Metals in contact” (with Mr. S. W. Dodgson) (*Proc. Chem. Soc.*, 1894); (5) “D’Arsonval Physical Theory” (with Mr. L. E. Hill) (*Journ. Physiol.*, 1894); (6) “The Electromotive Properties of *Malapterurus electricus*” (with Prof. Gotch) (*Phil. Trans.*, 1896).

Supplementary Certificate.

Author of the following scientific papers in addition to those stated in the first certificate :—“On Prof. Hermann's Theory of the Capillary Electrometer” (*Proc. Roy. Soc.*, vol. lx., p. 328); “The Tangent Lens-gauge” (*Phil. Mag.*, 1897, p. 256); “An Inductor-Alternator for Physiological Experiments” (*Journ. of Physiology*, vol. xxi., 1897); “An Account of Certain Phenomena of Colour Vision with Intermittent Light” (*ibid.*); “Artificial Colour Blindness, with an Examination of the Colour-Sensations of 109 Persons” (*Phil. Trans.*, vol. clxii., 1899); joint author with Prof. Gotch, F.R.S., of the following scientific papers :—“The Electrical Response of

Nerve to a Single Stimulus as investigated by the Capillary Electrometer" (*Proc. Roy. Soc.*, vol. lxiii., 1898, p. 300); "The Electrical Response of Nerve to Two Stimuli" (*Journ. of Physiol.*, vol. xxvi., 1899); "The Electromotive Force of the Organ Shock, &c., in *Malapterurus electricus*" (*Proc. Roy. Soc.*, vol. lxxv., p. 434, 1900).

T. W. EDGEWORTH DAVID,

B.A. (Oxon.), F.G.S. Professor of Geology in the University of Sydney, N.S.W. Formerly Senior Geologist to the Geological Survey of New South Wales, and author of many reports and maps issued by the Survey. Has published many papers dealing with Glacial action in recent, as well as ancient, geological periods; among others:—"Evidences of Glacial Action in S. Brecknock and E. Glamorgan" (*Quart. Journ. Geol. Soc.*, vol. xxxix., pp. 39-58, 1882); "On Evidences of Glacial Action in the Carboniferous and Hawkesbury Series, N.S.W." (*ibid.*, vol. xliii., pp. 190-197, 1887); "On Glacial Action in Australia in Permo-Carboniferous Times" (*ibid.*, vol. lli., pp. 289-302, 1896); also many papers and addresses dealing with Petrology, Vulcanology, and Stratigraphical Geology in the Southern Hemisphere, published in the *Journals* of the Royal, Linnean, and the Societies of New South Wales. Has superintended and conducted to a successful issue the work of boring the Coral Atoll of Funafuti, undertaken by the Royal Society and the Geographical Society of New South Wales, with the assistance of the Admiralty.

JOHN BRETLAND FARMER,

M.A. (Oxon.), F.L.S. Professor of Botany, Royal College of Science, London. Formerly Fellow of Magdalen College, Oxford. Distinguished for his Botanical and Biological researches. Author of the following papers:—"On the Development of the Endocarp in *Sambucus nigra*" (*Ann. of Bot.*, vol. ii.); Contribution to the "Morphology and Physiology of Pulpy Fruits" (*ibid.*, vol. iii.); "The Stomata in the Fruit of *Iris Pseudacorus*" (*ibid.*, vol. iv.); "On *Isoetes lacustris*" (*ibid.*, vol. v.); "On Abnormal Flowers in *Oncidium splendendum*" (*ibid.*, vol. vi.); "On the Occurrence of two Prothallia in an Ovule of *Pinus silvestris*" (*ibid.*); "On the Embryogeny of *Angiopteris evecta*" (*ibid.*); "On Nuclear Division in the Pollen-mother-cells of *Lilium martagon*" (*ibid.*, vol. vii.); "On the Relations of the Nucleus to Spore-formation in certain Liverworts" (*Proc. Roy. Soc.*, vol. liv.); "Studies in Hepaticæ" (*Ann. of Bot.*, vol. viii.); "On Spore-formation and Nuclear Division in the Hepaticæ" (*ibid.*, vol. ix.); "Further Investigations on Spore-formation in *Fegatella conica*" (*ibid.*); "Respiration and Assimilation in Cells containing Chlorophyll" (*ibid.*, vol. x.); "Ueber Kerntheilung in *Lilium*" (*Flora*, 1895); "On the Structure of a Hybrid Fern" (*Ann. of Bot.*, vol. xi.). Joint Author of:—with J. Reeves, "On the Occurrence of Centrospheres in *Pellia epiphylla*" (*ibid.*, vol. viii.); with J. H. Williams, "On Fertilisation and the Segmentation of the Spore of *Fucus*" (*Proc. Roy. Soc.*, vol. lx.); with T. Waller, "Observations on the Action of Anæsthetics on Vegetable and Animal Protoplasm" (*ibid.*, vol. lxiii.); with J. Brentland, "Contributions to our Knowledge of the Fucaceæ, their Life-History and Cytology" (*Phil. Trans.*, vol. exc.).

LEONARD HILL,

M.B. Lecturer on Physiology, London Hospital Medical College. Distinguished as a Physiologist. Author of the following works:—"On Poisoning by Phosphorus" (*Lancet*, 1890); "On Intra-Cranial Pressure" (*Roy. Soc. Proc.*, vol. lv.); "On Effects of Compression of the Common Carotid Artery" (with Moore) (*Brit. Med. Journ.*, 1894); "On Formation of Heat in the Salivary Glands" (with Bayliss) (*Journ. of Phys.*, vol. xvi.); "On D'Arsonval's Physical Theory of the Negative Variation" (with Birch) (*ibid.*); "On a Simple Form of Gas Pump" (*ibid.*, xvii.); "Exchange of Blood-Gases" (with Nabarro) (*ibid.*); "On Exchange of Blood-Gases in Brain and Muscle" (*ibid.*, xviii.); "On the Influence of Gravity on the Circulation" (*ibid.*); "On Intra-Cranial Pressure and the Circulation" (with Bayliss) (*ibid.*); "The Physiology and Pathology of the Cerebral Circulation," Hunterian Lectures, Churchill, 1896; "On Nervous Pressure and the Pulse" (with Barnard and Sequeira) (*Journ. Physiol.*, xxi.); "Influence of Gravity on the Circulation" (with Barnard) (*ibid.*); "The Causation of Chloroform Syncope" (*Brit. Med. Journ.*, 1897); "A Simple

Form of Sphygmometer" (*ibid.*); "On Arterial Pressure in Man" (*Journ. Phys.*, xxii.); "On Rest, Sleep and Work on Arterial Pressure" (*Lancet*, 1898); "On Syncope and the Influence of Posture on Rabbits" (*Journ. Phys.*, xxii.); "On the Effects of Cerebral Anæmia produced by Ligation of the Cerebral Arteries" (with Mott) (*ibid.*, 1898); "On Human Cerebro-Spinal Fluid" (*Proc. Roy. Soc.*, 1898). In the press:—"Mechanism of the Circulation" (Schäfer, "Text-Book of Phys."); "Cerebral Circulation" (Allbutt's "System of Medicine").

JOHN HORNE,

F.G.S., F.R.S.E. One of the Senior Geologists on the Staff of the Geological Survey of Scotland. Has been engaged for more than thirty years in the Geological Survey. From 1868 to 1876 he personally studied and mapped large areas of the Silurian uplands of Scotland. From 1876 to 1883 he surveyed extensive tracts in the counties of Nairn, Inverness, Banff and Aberdeen. From 1884 till the present time he has taken an important share in the investigation and mapping of the complicated geology of the North-West Highlands. In addition to these official researches he has devoted his intervals of holiday to original exploration, and has made important contributions to our knowledge of the glacial and volcanic geology of the Orkney and Shetland Isles. Among his papers are the following:—"A Sketch of the Geology of the Isle of Man," and the "Post-Pliocene Formation of the Isle of Man" (*Edin. Geol. Soc. Trans.*, ii., 1174, pp. 323, 329); "The Geology of the Island of Unst" (*Edin. Phys. Soc. Proc.*, iv., 1878, p. 274); "The Volcanic History of the Old Red Sandstone Period North of the Grampians" (*Glas. Geol. Soc. Trans.*, vii., 1881, p. 77). Most of his investigations have been worked out in conjunction with Mr. B. N. Peach, F.R.S., but the results have been arranged and described by Mr. Horne. Some of this conjoint work has been of the highest value, both in regard to British geology and to the theoretical treatment of the science. Special reference may be made to the "Report on the Recent Work of the Geological Survey in the North-West Highlands of Scotland" (*Quart. Journ. Geol. Soc.*, xlv., 1888, p. 378), in which the detailed structure of one of the most intricate geological regions in Europe was worked out and illustrated; to a paper on "The Olenellus-Zone in the North-West Highlands" (*ibid.*, xlvi., 1892, p. 227), which demonstrated the existence and stratigraphical relations of Lower Cambrian Rocks in Scotland; and to the large volume recently published by the Geographical Survey, on "The Silurian Rocks of Scotland" (p. 749), which gives the detailed results of a prolonged and laborious investigation by Messrs. Peach and Horne of the whole Silurian region of southern Scotland. In 1888 was awarded the Wollaston Fund by the Geological Society, and in 1899 received from the same Society, in association with his friend and colleague, Mr. Peach, a duplicate Murchison medal. Received, in 1893, the Neill medal from the Royal Society of Edinburgh, in recognition of the value of his contributions to Geology.

JOSEPH JACKSON LISTER,

M.A., F.Z.S. Demonstrator of Comparative Anatomy in the University of Cambridge. Distinguished as a Zoologist. Was Naturalist on board H.M.S. *Egeria* in two cruises, one to Christmas Island (Indian Ocean), the fauna of which he was the first to investigate, and another in the Pacific among the Tonga, Union and Phoenix Islands, during which he made himself well acquainted with the fauna of those islands, and of the Seychelles. His researches on the Foraminifera have thrown important light on the life-history and reproduction of that group. Author of the following papers:—"On the Natural History of Christmas Island in the Indian Ocean" (*Proc. Zool. Soc.*, 1888, p. 512); "On some Points in the Natural History of Fungia" (*Quart. Journ. Microsc. Soc.*, vol. xxix., p. 359); "A Visit to the Newly-Emerged Falcon Island, Tonga Group, S. Pacific" (*Proc. Roy. Geograph. Soc.*, March 1890); "Notes on the Birds of the Phoenix Islands, Pacific Ocean" (*Proc. Zool. Soc.*, 1891, p. 289); "Notes on the Natives of Fakaofo (Bowditch Island), Union Group" (*Journ. Anthropol. Inst.*, 1891, p. 43); "Notes on the Geology of the Tonga Island" (*Quart. Journ. Geol. Soc.*, vol. xlvii., p. 590); "Contributions to the Life-History of the Foraminifera" (Abstract, *Proc. Roy. Soc.*, vol. lvi., p. 155. Full paper, *Phil. Trans.*, vol. clxxxvi., 1895b, p. 401); "A Possible Explanation of the Quinqueloculine Arrangement of the Chambers in the Young of the

Microspheric Forms of Triloculina and Biloculina" (*Proc. Camb. Phil. Soc.*, vol. ix., pt. v.); with J. J. Fletcher, "On the Condition of the Median Portion of the Vaginal Apparatus in the *Macropodidae*" (*Proc. Zool. Soc.*, vol. lxiii., 1881, p. 976).

Supplementary Certificate.

Author of "*Astroclera Willeyana*, the representative of a New Family of recent Sponges," in the Zoological Results of Dr. Willey's Expedition, 1899.

JAMES GORDON MACGREGOR,

D.Sc. (Lond.), 1876. M.A. (Dalh.) Professor of Physics, Dalhousie College, Halifax, N.S. Well known for his long-continued Researches on Electrolytic Conductivity, on Solutions, on Resistance of Metals, and on Thermo-electricity. Author of numerous Memoirs contributed to the Royal Society of Edinburgh, the Royal Society of Canada, the Physical Society, and the British Association, including the following:—"Note on the Electrical Conductivity of Saline Solutions" (*Proc. Roy. Soc., Edin.*, 1875); "On the Electrical Conductivity of Stretched Silver Wires" (*ibid.*, 1878); "On the Variation with Temperature of the Electrical Resistance of certain Alloys" (*Trans. Roy. Soc., Edin.*, 1880); "On the Measurement of the Resistance of Electrolytes by means of Wheatstone's Bridge" (*Trans. Roy. Soc., Canada*, 1882); "On some Experiments showing that the Electromotive Force of Polarisation is independent of the difference of Potential of the Electrodes" (*ibid.*, 1883); "On a Test of Ewing and MacGregor's Method of Measuring the Electrical Resistances of Electrolytes" (*ibid.*, 1890, with Prof. Ewing); "Note on the Volumes of Solutions" (*Brit. Assoc. Report*, 1877, with Dr. Knott); "On the Thermo-electric Properties of Charcoal and certain Alloys, with a Supplementary Thermo-electric Diagram" (*Edin. Trans.*, 1879, with Dr. Knott and Prof. Michie Smith); "The Thermo-electric Properties of Cobalt" (1876, *Proc. Roy. Soc., Edin.*, 1878); "On the Absorption of Low Radiant Heat by Gaseous Bodies" (*ibid.*, 1882-83); "On the Resistance to the Passage of the Electric Current between Amalgamated Zinc Electrodes and Solutions of Zinc Sulphate" (*Trans. Nov. Scot. Inst. Nat. Sci.*, 1883); "On the Density and the Thermal Expansion of Solutions of Sulphate of Copper" (*Trans. Roy. Soc., Canada*, 1884); "On the Relative Bulk of certain Aqueous Solutions and their Constituent Water" (*Trans. Nov. Scot. Inst. Nat. Sci.*, 1886); "A Table of Cubic Expansions" (*Trans. Roy. Soc., Canada*, 1888); "On the Variation of the Density with the Concentration of Weak Aqueous Solutions of certain Salts" (*ibid.*, 1889, vol. ix., 1891); "On the Calculation of the Conductivity of Electrolytes" (*ibid.*, 1896); "On the Relation of the Physical Properties of Aqueous Solutions to their State of Ionisation" (*Phil. Mag.*, 1897); "On the Hypothesis of Abstract Dynamics and the question of the number of Elastic Constants" (*ibid.*, 1896, with Mr. E. A. Archibald); "On Calculation of Conductivities of Electrolytes" (*ibid.*, February 1898). Author of "An Elementary Treatise on Kinematics and Dynamics" (1887).

PATRICK MANSON,

C.M.G., M.D. (Aberd.). F.R.C.P. (Lond.). LL.D. (Aberd.). Physician and Medical Adviser to the Colonial Office. Lecturer on Tropical Medicine, St. George's Hospital, Charing Cross Hospital and London School of Tropical Medicine. Distinguished as a Physician and Parasitologist. Discoverer of Filarial Periodicity of the rôle of the Mosquito in Filarial Metamorphosis; of Filarial Ecdysis; and of many other points in connection with the life-history of the *Filaria nocturna*. Discoverer of three other blood-worms of man, viz. *Filaria diurna*, *Filaria perstans* and *Filaria demarquati*. Discoverer of the disease known as Endemic hæmoptysis and of its Parasitic cause. Discoverer of *Bothrioccephalus Mansonii* and of many points in connection with human and animal helminthology. Was the first to describe accurately and to name *Finea imbricata*, and to prove experimentally its dependence on a vegetable parasite. Was the first to point out the significance of the flagellated body as the initial stage of the extra-corporeal cycle of the malaria parasite, and to enunciate the hypothesis that the mosquito was the host of the parasite at this stage, and therefore an active agent in diffusing malaria, an hypothesis since proved by Major Ross to be correct. Author of a work on *Filaria sanguinis hominis* and some Parasitic Diseases of Warm Climates, 1883; of "Tropical Diseases," 1898; of the Goulstonian Lectures on

the Life-History of the Malaria Parasite Outside the Human Body, 1896; of Papers on the Metamorphosis of *Filaria sanguinis hominis* in the Mosquito (*Trans. Linn. Soc.*, 1883); "On the Nature and Significance of the Flagellated Body in Malarial Blood" (*Brit. Med. Journ.*, 1894); and of many other papers on the subjects mentioned above and allied matters.

THOMAS MUIR,

LL.D., M.A., F.R.S.E. Superintendent-General of Education in the Cape Colony. Distinguished as a Mathematician and Educationist. Author of "A History of Determinants," and fifty-eight original mathematical papers, including "Continuants: a New Special Class of Determinants" (*Proc. Roy. Soc. Edin.*, 1875); "On the Transformation of Gauss' Hypergeometric Series into a Continued Fraction" (*Lond. Math. Soc.*, 1876); "New General Formulæ for the Transformation of Infinite Series into Continued Fractions" (*Trans. Roy. Soc. Edin.*, 1876); "On Eisenstein's Continued Fractions" (*ibid.*, 1879); "On a Systematic Determinant connected with Lagrange's Interpolation Problem" (*Lond. Math. Soc. Proc.*, 1881-2); "On New and Recently Discovered Properties of certain Symmetric Determinants" (*Quart. Journ. Math.*, 1882); "On the Phenomena of 'Greatest Middle' in the Cycle of a Class of Periodic Continued Fractions" (*Proc. Roy. Soc. Edin.*, 1884); "The Theory of Determinants in the Historical Order of its Development" (*ibid.* vol. xiii.-xvi.); "On Some Hitherto Unproved Theorems in Determinants" (*ibid.*, 1891); "A Problem of Sylvester's in Elimination" (*ibid.*, vol. xx.); "New Relations between Bipartite Functions and Determinants, with a Proof of Cayley's Theorem in Matrices" (*Lond. Math. Soc. Proc.*, vol. xvi.). Has rendered services of the highest importance to education in the Cape Colony, and in his capacities of trustee of the South African Museum and member of the Geological Commission has greatly promoted original scientific research in South Africa.

ARTHUR ALCOCK RAMBAUT,

M.A., Sc.D. (Dublin). Radcliffe Observer. Late Royal Astronomer of Ireland. Late Andrews Professor of Astronomy in the University of Dublin. Author of the following researches in Astronomy and Physics:—"Catalogue of the Mean Places of 1012 Southern Stars" ("Astronomical Observations and Researches of Dunsink," part vi.); "Catalogue of the Mean Places of 717 Stars" (part vii., *ibid.*); "On the Determination of Double Star Orbits from Spectroscopic Observations of the Velocity in the Line of Sight" (*Monthly Notices, Roy. Astron. Soc.*, vol. li., No. 5); "To Adjust the Polar Axis of an Equatorial Telescope for Photographic Purposes" (*ibid.*, liv., No. 2); "On the Inequality in the Apparent Diurnal Movement of Stars due to Refraction, and a Method of Allowing for it in Astronomical Photography" (*ibid.*, vol. lviii., No. 2); "On a Geometrical Method of Finding the most Probable Apparent Orbit of a Double Star" (*Proc. Roy. Dubl. Soc.*, vol. vii., part 2); "On the Distortion of Photographic Star Images due to Refraction" (*ibid.*, vol. viii., part 2); "On the Rotation Period of the 'Garnet' Spot on Jupiter" (*ibid.*, vol. viii., part 5); "On the Relative Positions of 223 Stars in the Cluster χ Persei, as Determined Photographically" (in conjunction with Sir R. Ball) (*Trans. Roy. Irish Acad.*, vol. xxx., part 4); "On the Possibility of Determining the Distance of a Double Star by means of the Relative Velocity of the Components in the Line of Sight" (*ibid.*, 2nd series, vol. iv., No. 6); "The Absorption of Heat in the Solar Atmosphere" (in conjunction with W. E. Wilson) (*ibid.*, 3rd series, vol. iii., No. 4).

WILLIAM JAMES SELL,

M.A. Senior Demonstrator of Chemistry, University of Cambridge. Author of the following papers:—"Volumetric Determination of Chromium" (*Trans. Chem. Soc.*, 1879); "On a Series of Salts of a Base containing Chromium and Urea," Nos. 1 and 2 (*Proc. Roy. Soc.*, 1882 and 1889); "Anhydro-Derivatives of Citric and Aconitic Acids" (*Trans. Chem. Soc.*, 1892); "Salts of a new Platinum Sulphurea Base" (*Brit. Assoc. Rept.*, 1893); "Studies on Citrazinic Acid," Pts. I.-V. (*Trans. Chem. Soc.*, 1893-1897); "Note on the Action of Chlorine on Pyridine" (*Trans. Chem. Soc.*, 1898); "The Chlorine Derivatives of Pyridine," Pts. I.-II. (*ibid.*, 1898); "Interaction of Ammonia and Pentachloropyridine" (*ibid.*); "Constitution of Glutazine" (*ibid.*).

W. BALDWIN SPENCER,

B.A. (Oxon.), M.A. (Melbourne). Professor of Biology in the Melbourne University; formerly Fellow of Lincoln College, Oxford; Hon. Sec. of the Royal Society of Victoria; Corr. Member Zool. Soc., Lond. Distinguished as an original investigator in Zoology and Comparative Anatomy; and as a teacher and organiser. Graduated at Oxford twelve years ago. Has published more than thirty memoirs, among which are:—"On a New Family of Hydroidea Ceratellidæ" (*Trans. Roy. Soc. Vict.*, 1890); "The Anatomy of *Megascolides Australis*," and other papers on Australian Earthworms and Planarians (*ibid.*); "On New Crustacea and New Mammals," in Report of the Horn Expedition to Central Australia (which he organised); "On the Pineal Eye in *Laerertilia*" (*Quart. Journ. Micro. Sci.*, 1887); "On the Habits, Blood-vessels and Lungs of *Ceratodus Fosteri*"; "On a New Genus of Marsupials from Central Australia" (*Proc. Roy. Soc. Vict.*, vol. ix.); "On the Cranial Nerves of Scyllium" (*Quart. Journ. Micro. Sci.*, 1881); "On the Early Development of *Rana temporaria*" (*ibid.*, 1885); "The Fauna and Zoological Relationships of Tasmania" (Presidential Address to Sect. D., Austr. Assoc. Adv. Sci., 1892).

JAMES WALKER,

D.Sc. (Edin.), Ph.D., Leipzig. Professor of Chemistry, University College, Dundee. An active and successful worker in chemistry, especially physical and organic. Author of numerous papers, of which the following are among the most important:—"Zur Affinitätsbestimmung Organischer Basen" (*Zeit. Physikal. Chem.*, iv. p. 319, 1889); "Ueber Löslichkeit und Schmelzwärme" (*ibid.*, v. 193, 1890); "The Dissociation Constants of Organic Acids" (*Journ. Chem. Soc.*, lxi., p. 696, 1892); "The Methyl Salts of Camphoric Acid" (*ibid.*, lxi., p. 1088, 1892); "The Electrolysis of Sodium Ethyl Camphorate" (*ibid.*, lxi., p. 495, 1893); "The Boiling Points of Homologous Compounds" (*ibid.*, part i., lxx., p. 193, 1894; part ii., lxx., p. 725, 1894); "Hydrolysis in some Aqueous Solutions" (*Proc. Roy. Soc. Edin.*, vol. xx., p. 255, 1894). Along with Prof. Crum Brown, "Electrolytic Synthesis of Dibasic Acids" (parts i. and ii. *Trans. Roy. Soc. Edin.*, vol. xxxvi., p. 211, 1891, and vol. xxxvii., p. 361, 1893). Along with J. Henderson, "Electrolysis of Potassium Allo-Camphorate" (parts i. and ii. *Journ. Chem. Soc.*, vol. lxxviii., p. 337, 1895; vol. lxxix., p. 748, 1896). Along with F. I. Hambly, "Transformation of Cyanate into Urea" (*Journ. Chem. Soc.*, vol. lxxvii., p. 746, 1895). Along with J. R. Appleyard, "Transformation of Methylammonium Cyanates into the Corresponding Ureas" (*Journ. Chem. Soc.*, vol. lxxix., p. 193, 1896).

PHILIP WATTS,

Naval Architect and Director of the War-Shipbuilding Department of Sir W. G. Armstrong, Whitworth and Co. Distinguished for his knowledge of the science and practice of Naval Architecture. Responsible designer of a considerable number of the swiftest and most powerful war-ships. Has done much original scientific and experimental work in connection with investigations of the stability of ships and floating bodies; the oscillations of ships in still water and amongst waves; the propulsion and manœuvring powers of ships. Was appointed by the Admiralty and acted for some years as assistant to the late Mr. W. Froude, F.R.S., on the analytical and experimental work carried on by that investigator. In that capacity he took part in the device and application of the process of "graphic integration" by which the oscillations of ships can be approximately determined under assumed conditions of wave motion, including the effect of fluid resistance. Has independently proposed a method of reducing the rolling of ships at sea, by the introduction of free water into a suitably formed chamber. This plan was adopted by the Admiralty for several important ships, after mathematical and experimental demonstration of its efficiency. Was entrusted with the experimental investigation of the turning powers of H.M.S. *Thunderer* made in connection with the work of the *Inflexible* Committee. Devised and applied methods for determining exactly the path traversed by the C.G. of the ship, the rate of acquisition of angular velocity, the angle of heel and other phenomena incidental to turning under the action of the rudder. This investigation led to subsequent modifications in the under-water form of ships, tending to increase their handiness. Is author of the following papers printed in the *Trans-*

actions of the Institution of Naval Architects:—"On a Method of Reducing the Rolling of Ships at Sea" (1883); "The Use of Water Chambers for Reducing the Rolling of Ships at Sea" (1885); "The Italian Cruiser *Piemonte*" (1889); "The Steering Qualities of the *Yashima*" (1898); "Elswick Cruisers Built during the last Ten Years" (1899).

CHARLES THOMSON REES WILSON,

M.A. (Cantab.), B.Sc. (Vict.). At present engaged in Investigations on Atmospheric Electricity on behalf of the Meteorological Council. Author of the following papers:—"On the Formation of Cloud in the absence of Dust" (*Cam. Phil. Soc. Proc.*, vol. viii., p. 306); "The effect of Röntgen's Rays on Cloudy Condensation" (*Roy. Soc. Proc.*, vol. lix., p. 338); "Condensation of Water Vapours in the Presence of Dust-free Air and other Gases" (*Phil. Trans.*, A., (1897), pp. 265-307); "On the Action of Uranium Rays on the Condensation of Water Vapour" (*Camb. Phil. Soc. Proc.*, vol. ix., pp. 333-338); "On the Production of a Cloud by the Action of Ultra-Violet Light on Moist Air" (*ibid.*, vol. ix., p. 392); "Condensation Nuclei produced in Gases by the Action of Röntgen Rays, Uranium Rays, Ultra-Violet Light and other Agents" (*Phil. Trans.*, A., 192, pp. 403-453); "Comparative Efficiency as Condensation Nuclei of positively and negatively charged Ions" (*ibid.*, A., 193, pp. 289-308).

LIEUT.-GENERAL PITT-RIVERS, F.R.S.

By the death of Lieut.-General Augustus Henry Lane-Fox Pitt-Rivers, F.R.S., on May 4, anthropology has lost one of her most prominent and enthusiastic students, and one whose place it will be impossible to fill.

Augustus Henry Lane-Fox was born in 1827. He served with distinction in the Crimea, at Alma and Sevastopol, being during that campaign an officer in the Grenadier Guards, and on the staff. As Lieut.-Colonel Lane-Fox he was the earliest and principal associate of Colonel, afterwards Lieut.-General, Hay, the first Commandant and Inspector-General of Musketry, and about 1855 he wrote and delivered the series of lectures which then, and since, formed a principal part of the Hythe curriculum. He had thus the honour and distinction of being prominently associated with the inauguration of one of the most important reforms in our military system. He had the unusual reputation in those days of military dandies of being an able, studious and scientific officer; but his career at Hythe was not a long one. While he was there he had the practical training and instruction of those who came to qualify as musketry instructors; and he added to, if he did not originate, the interesting collection of ancient arms and weapons and projectiles in that establishment. General Pitt-Rivers never lost his interest in military matters, and as late as 1893 he was appointed Colonel of the South Lancashire Regiment.

Few men have had the collecting instinct so strongly developed as had General Pitt-Rivers, but in his case not only were his interests extremely wide, but he had always some method in his collecting; there was invariably some principle or theory that the objects were designed to illustrate. Consequently he bought with judgment, and what in most collections are "curios" or trophies, under his arrangement became links in a chain of scientific argument, or clever suggestions of stages in the evolution of human thought or handicraft.

The spoils of over twenty years of intelligent collecting were exhibited, in 1874, in the Bethnal Green Museum, and the catalogue of this collection was published by the Science and Art Department. It is no exaggeration to say that this collection was a revelation to many people, and it and the catalogue initiated a new departure in the study of handicrafts. It was, in fact, the first practical application of the theory of evolution to objects made by man. As Colonel Lane-Fox he was, for